By BRUCE T. GRIMM

Domestic Nonfinancial Corporate Profits

DOMESTIC profits of nonfinancial corporations increased strongly from 1950 to 1979, although growth was temporarily reversed several times during the period. This general characterization fits all of the measures discussed in this article—corporate profits with and without inventory valuation and capital consumption adjustments, profits alone and in combination with corporate net interest, and with each of these before and after deduction of corporate profits taxes. Depending on the measure examined, the increase was in the range of 350 to 725 percent from 1950 to 1979, and growth was reversed six or seven times.

This article uses national income and product account (NIPA) estimates of these measures. The measures are identified and shown in relationship to each other in chart 6. The three decades of estimates of profits, and also the estimates of corporate gross product and fixed capital that are used in the analysis of the profits measures, incorporate the results of the comprehensive revision of the NIPA's completed in 1980.

The article is in two sections. In the first section, developments in these measures are reviewed in terms of ratios to nonfinancial corporate gross domestic product (NFC GDP) and, less extensively, in terms of rates of return to capital. The ratios are used because they permit analysis that abstracts from the trend growth in profits resulting from the increasing size of the domestic nonfinancial corporate sector. Attention is focused on a drop in the ratios from the 1950's and 1960's to the 1970's. The size of the drops in the various measures are compared and a rough quantitative evaluation is made of the extent to which changes in the state of the economy explain the drops.

In the second section, a short-run theory of corporate profits—that cor-

porations set prices as markups on "normal" costs and that profits are a residual—is used to examine some of the economic conditions that have influenced the ratios. Among the conditions are the rate of inflation, the growth rate of labor productivity, capital-output ratios, and the growth rate of earnings. In addition, statistical tests are conducted in an effort to determine which measure of profits is of primary concern to corporations when they are setting markup rates.

I. Domestic Nonfinancial Corporate Profits, 1950–79

In this section, each measure of profits is briefly introduced and its cyclical fluctuations and trends are traced. The measures that are ratios to NFC GDP are summarized in table 1 and the ones that are rates of return are summarized in table 2.

NIPA profits

The profits concept emphasized in the NIPA's is profits from current production (hereafter referred to as "NIPA profits"); this measure is consistent conceptually with the other components of national income in that it measures the return to factors of production.[1] Statistically, NIPA profits are derived from total receipts less total deductions as reported to the Internal Revenue Service (IRS) by corporations on their tax returns. The derivation consists of several adjustments. The inventory valuation adjustment (IVA) is used to convert inventories used up at replacement-cost valuation from a historical-cost valua-

tion, the valuation used by most corporations. If replacement cost exceeds historical cost, the measure of profits calculated by these coporations will include an amount that is called inventory profits, and the purpose of the IVA, which can be viewed as inventory profits with sign reversed, is to exclude these profits from NIPA profits.

Second, the capital consumption adjustment (CCAdj) is used to revalue fixed capital used up in production. The CCAdj has two components. The first places the using up in production of fixed capital on a consistent basis with respect to service lives (85 percent of IRS Bulletin F for equipment

---

Measures Discussed in This Article

Note.—"NIPA profits" are corporate profits with inventory valuation and capital consumption adjustments.

"Reported profits" are profits before tax.

"Profits taxes" are profits tax liability.

For nonfinancial corporations, these measures are in NIPA table 1.13 in lines 27 through 29, respectively; inventory valuation adjustment, capital consumption adjustment, and net interest are in lines 33 through 35, respectively.

U.S. Department of Commerce, Bureau of Economic Analysis   82-1-6

---

1. The NIPA measure excludes capital gains and losses from income and resembles Pigou's concept in that NIPA profits are the excess of income over expenses beyond that necessary to maintain tangible capital intact. See A. C. Pigou, "Maintaining Capital Intact," *Economica* (August 1941): 271–75.

and nonresidential structures) and depreciation formulas (straight-line). This component of the adjustment is needed because tax law permits corporations to report profits calculated using faster than linear formulas and service lives shorter than those actually used.[2] The second component of this adjustment is used to convert fixed capital used up in production to a replacement-cost valuation from a historical-cost valuation, the valuation generally underlying business accounting. If replacement cost exceeds historical cost, the measure of profits calculated by corporations includes an amount that is attributable to this misdepreciation of the fixed capital stock, and the purpose of this component of the CCAdj is to exclude this amount from NIPA profits.

Third, in deriving all measures of profits discussed in this article, some other adjustments are made to corporations' receipts and deductions reported to the IRS. The principal adjustments remove dividends received from domestic corporations, remove income on equities in foreign corporations and branches, add back certain charges (such as depletion allowances and bad debts), and remove capital gains and losses.

The ratio of NIPA profits to NFC GDP exhibited substantial cyclical movements in the period 1950 to 1979 (chart 7). Troughs in this ratio occurred in every recession and peaks occurred in every expansion (see note 2 to chart 7).[3] The lowest value of the ratio occurred during the 1973–75 recession—the longest and most severe recession of the period examined.

The very high values of the ratio observed in 1950 and 1951 reflect the effects of the beginning of the Korean War. In the later stages of the war, price controls had the effect of lowering the ratio. High values of the ratio also occurred during the long period of expansion in the 1960's. In addition to cyclical volatility, the ratio has trended down over the period examined.

NIPA profits plus net interest.—The sum of NIPA profits and net interest is, in many ways, a more interesting measure than NIPA profits alone.

Table 1.—Ratios of Various Measures of Domestic Nonfinancial Corporate Profits to Nonfinancial Corporate Gross Domestic Product

Year	NIPA profits	NIPA profits plus net interest	After-tax NIPA profits	After-tax NIPA profits plus net interest	Reported profits	Reported profits plus net interest	After-tax reported profits	After-tax reported profits plus net interest
1950	0.1947	0.2006	0.0836	0.0896	0.2533	0.2593	0.1422	0.1482
1951	.1912	.1974	.0696	.0768	.2242	.2303	.1035	.1087
1952	.1658	.1725	.0632	.0749	.1858	.1917	.0874	.0941
1953	.1540	.1605	.0642	.0848	.1789	.1854	.0841	.0907
1954	.1489	.1569	.0672	.0754	.1672	.1760	.0887	.0937
1955	.1766	.1841	.0934	.0968	.1989	.2015	.1006	.1081
1956	.1562	.1627	.0685	.0760	.1907	.1882	.0940	.1015
1957	.1449	.1530	.0663	.0742	.1644	.1733	.0855	.0945
1958	.1290	.1394	.0695	.0769	.1421	.1541	.0742	.0856
1959	.1506	.1625	.0729	.0846	.1622	.1738	.0842	.0959
1960	.1343	.1474	.0656	.0781	.1433	.1567	.0728	.0864
1961	.1349	.1481	.0600	.0788	.1387	.1525	.0704	.0843
1962	.1463	.1608	.0640	.0949	.1411	.1556	.0148	.0884
1963	.1545	.1689	.0666	.1063	.1480	.1605	.0774	.0819
1964	.1619	.1757	.0942	.1089	.1544	.1691	.0876	.1023
1965	.1720	.1874	.1029	.1183	.1657	.1811	.0966	.1120
1966	.1673	.1849	.0969	.1160	.1690	.1801	.0947	.1117
1967	.1515	.1709	.0906	.1099	.1461	.1654	.0851	.1044
1968	.1465	.1666	.0797	.0999	.1456	.1658	.0791	.0992
1969	.1241	.1461	.0631	.0872	.1275	.1516	.0666	.0906
1970	.0954	.1236	.0455	.0759	.1007	.1309	.0526	.0829
1971	.1019	.1314	.0533	.0826	.1072	.1367	.0584	.0879
1972	.1072	.1363	.0577	.0858	.1130	.1411	.0685	.0916
1973	.1085	.1338	.0509	.0812	.1254	.1567	.0788	.1041
1974	.0776	.1138	.0363	.0635	.1286	.1648	.0773	.1135
1975	.0967	.1313	.0504	.0850	.1206	.1552	.0743	.1089
1976	.1071	.1384	.0545	.0840	.1348	.1648	.0822	.1117
1977	.1118	.1413	.0592	.0886	.1359	.1653	.0833	.1126
1978	.1088	.1373	.0553	.0848	.1372	.1661	.0842	.1132
1979	.0965	.1265	.0472	.0791	.1265	.1564	.0873	.1152
1950–59	.1605	.1690	.0697	.0778	.1858	.1833	.0941	.1021
1960–69	.1493	.1656	.0627	.0898	.1472	.1638	.0806	.0972
1970–79	.1004	.1313	.0500	.0808	.1241	.1550	.0737	.1046

Table 2.—Rates of Return on Current-Dollar Net Nonfinancial Corporate Capital Stock Using Various Profits Measures

[Percent]

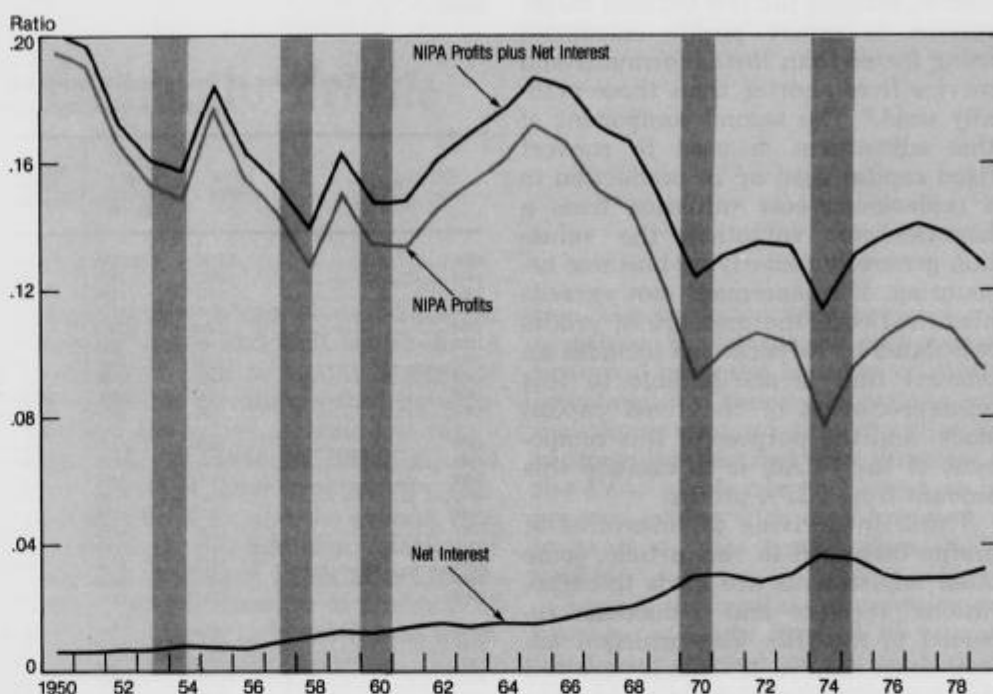| Year	NIPA profits	NIPA profits plus net interest	After-tax NIPA profits	After-tax NIPA profits plus net interest	Reported profits	Reported profits plus net interest	After-tax reported profits	After-tax reported profits plus net interest
1950	14.9	15.3	6.4	6.8	19.3	19.8	10.0	11.3
1951	14.6	15.3	5.4	6.0	17.4	17.8	7.9	8.4
1952	12.4	12.0	5.1	5.6	12.6	14.3	7.3	7.0
1953	11.7	12.2	4.6	5.0	13.7	14.1	6.4	6.9
1954	10.6	11.4	4.9	5.5	12.1	12.7	6.2	6.6
1955	13.1	14.3	6.6	7.1	15.1	15.6	7.5	8.4
1956	11.7	13.2	5.2	5.7	13.6	14.2	7.1	7.5
1957	10.5	11.1	4.6	5.4	12.0	12.6	6.2	6.9
1958	8.6	9.5	4.1	4.8	9.8	10.5	5.1	5.9
1959	11.3	12.2	5.5	6.3	12.1	13.0	6.8	7.2
1960	10.2	11.1	4.9	5.9	10.8	11.8	5.5	6.5
1961	10.2	11.2	5.0	6.0	10.6	11.5	6.2	6.4
1962	11.7	12.0	5.4	7.6	11.3	12.4	6.0	7.1
1963	12.6	13.6	7.0	8.2	11.9	13.1	6.8	7.5
1964	13.5	14.7	7.9	9.1	12.9	14.2	7.2	8.9
1965	14.6	16.1	9.8	10.2	14.2	15.6	8.1	9.6
1966	14.3	15.8	8.5	9.3	14.0	15.4	7.9	9.6
1967	12.4	14.0	7.4	9.6	12.0	13.6	6.8	8.6
1968	12.1	13.8	6.6	8.3	12.1	13.7	6.3	8.2
1969	10.1	12.1	5.1	7.1	10.4	12.3	5.2	7.4
1970	7.1	9.5	3.5	5.8	7.7	10.0	3.9	6.3
1971	7.8	10.1	4.1	6.3	8.2	10.5	4.2	6.7
1972	8.5	10.7	4.6	6.8	8.9	11.1	4.9	7.2
1973	8.2	10.6	4.6	6.4	10.0	12.4	6.5	8.2
1974	5.5	8.1	1.9	4.4	9.1	11.7	5.2	8.1
1975	6.6	8.8	3.4	5.7	8.1	10.4	4.6	7.3
1976	7.5	9.8	3.8	5.9	9.4	11.5	5.4	7.8
1977	8.0	10.2	4.3	6.4	9.8	11.9	5.3	8.1
1978	7.8	9.9	4.0	6.1	9.8	11.9	5.5	8.1
1979	6.8	9.0	3.3	5.6	9.6	11.8	5.7	8.4
1950–59	12.1	12.6	5.2	5.9	13.9	14.5	7.1	7.6
1960–69	12.2	13.6	6.6	8.1	12.0	13.4	6.5	8.0
1970–79	7.4	9.7	3.7	5.9	9.1	11.3	5.0	7.5

The sum is not affected by whether corporations choose debt or equity financing—a choice determined by such factors as tax regulations and the conditions in debt and equity markets. If, for example, a corporation increases the share of its capital financed by debt, the ratio of net interest to profits will increase even though the sum of net interest and profits is unchanged (assuming that no other economic conditions are changed). The use of the sum also avoids the problem of ascertaining whether inflation has raised profits at the expense of bondholders.

Because the ratio of net interest to NFC GDP has not exhibited substantial cyclical fluctuations, the ratio of the sum of NIPA profits plus net interest to NFC GDP exhibits cyclical fluctuations similar to those of the ratio of NIPA profits to NFC GDP. The ratio of NIPA profits plus net interest to NFC GDP reached its lowest value in the 1973–75 recession and has shown less of a downward trend than has the ratio of NIPA profits alone to NFD GDP. The smaller downward trend results from a substantial increase, since the mid-1950's, in the ratio of net interest to NFC GDP (chart 7). This increase reflects both an increased share of funds raised in debt markets and higher interest rates.

In addition to these cyclical fluctuations in the ratio of NIPA profits plus net interest to NFC GDP, year-to-year movements in the ratio correspond closely to year-to-year changes in the state of the economy as measured by the ratio of actual real GNP to the Council of Economic Advisers' measure of potential GNP (chart 8). High ratios of actual to potential real GNP occur in expansions, low ratios occur in recessions. The ratio of NIPA profits plus net interest to NFC GDP was low, relative to the state of the economy, in the late 1960's and early 1970's.

The longer run movements of NIPA profits and net interest may be examined using decade averages (table 3). There was a 0.012 drop in the ratio of NIPA profits to NFC GDP from the 1950's to the 1960's. This drop was largely offset by an increase in the ratio of net interest to NFC GDP. The remaining small drop in the ratio of NIPA profits plus net interest to NFC GDP was accompanied by a small de-

CHART 7

Ratios to Gross Domestic Product

Notes. — 1. Measures are for nonfinancial corporations.
2. Shaded areas indicate recessions, based on business cycle peaks and troughs, as designated by the National Bureau of Economic Research.

U.S. Department of Commerce, Bureau of Economic Analysis

82-1-7

Table 3.—Average Ratios of NIPA Profits and Net Interest to Nonfinancial Corporate Gross Domestic Product

	1950–59	1960–69	1970–79
NIPA profits	0.161	0.149	0.100
Net interest	.008	.017	.031
NIPA profits plus net interest	.169	.166	.131

cline in the average ratio of actual to potential real GNP from 0.992 in the 1950's to 0.988 in the 1960's.

There was a 0.049 drop in the ratio of NIPA profits to NFC GDP from the 1960's to the 1970's. This drop was partly offset by a 0.014 increase in the ratio of net interest to NFC GDP. The remaining 0.035 drop was accompanied by a decline in the average ratio of actual to potential real GNP to 0.958 in the 1970's.

It is possible to perform a rough quantitative evaluation of whether the decline in the average ratio of actual to potential real GNP from the 1950's and 1960's to the 1970's provides a full explanation of the observed drop in the ratio of NIPA profits plus net interest to NFC GDP. The

quantitative relationship of the two ratios may be obtained for 1950–69 by estimating a regression equation. This equation may then be used to forecast values for the ratio of NIPA profits plus net interest to NFC GDP in the 1970's by using observed values of the ratio of actual to potential real GNP. If the same relationship held in the 1970's as did in the 1950's and 1960's, the forecasted values for the ratio of NIPA profits plus net interest to NFC GDP should average close to the observed values. The relationship, estimated by an ordinary least squares regression equation for 1950–69, is:

$$\text{Piratio} = -0.2012 + 0.3722 \text{ Gapratio}$$
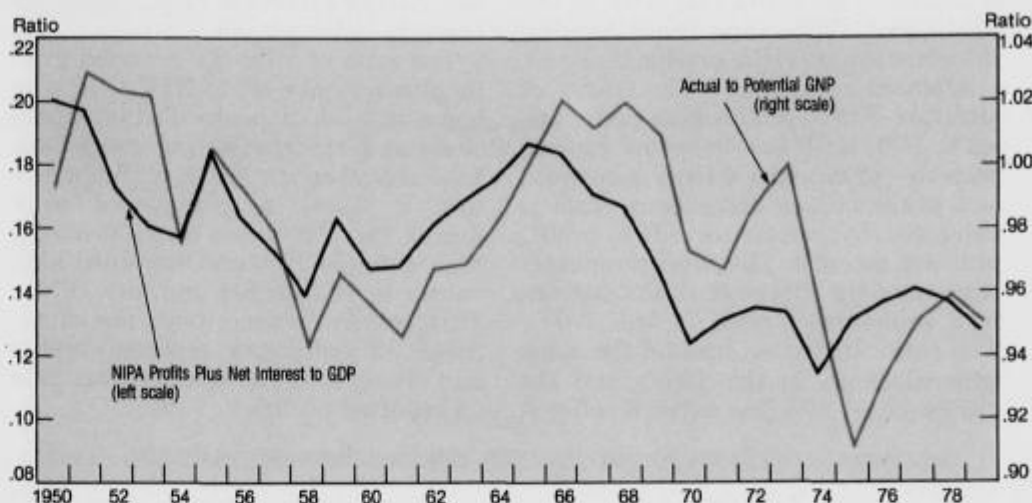$$(-1.7) \quad (3.2)$$
$$\bar{R}^2 = 0.326; \ D-W = 0.745; \ (t-\text{test statistics in parentheses})$$

where:

Piratio = the ratio of NIPA profits plus net interest to NFC GDP;

Gapratio = the ratio of actual to potential real GNP.

Use of this equation and observed ratios of actual to potential real GNP yields an average forecasted value for the NIPA profits plus net interest to NFC GDP of 0.155 in the 1970's, much higher than the 0.131 observed average ratio. In contrast, if the relationship between the two ratios is estimated for 1950–59 and used to forecast the average value of the ratio in the 1960's, the average forecasted value is 0.167, very close to the observed average ratio of 0.166. Similarly, if the relationship is estimated for 1960–69 and used to estimate the average value of the ratio in the 1950's, the average estimated value is 0.167, close to the observed average value of 0.169. (These estimated relationships may be found in appendix table A.1.) Thus, a rough quantitative investigation indicates that the relationship between the ratio of NIPA profits plus net interest to NFC GDP and the ratio of actual to potential real GNP was relatively stable in the 1950's and 1960's but shifted in the 1970's.[4] (As will be seen in the second section, more sophisticated quantitative analysis supports this conclusion.)

Other measures

Reported profits.—Some analysts prefer the measure of profits in the NIPA's that is closest to profits as measured on corporations' own books. That measure is profits before tax (hereafter referred to as "reported profits"). It is equal to NIPA profits less the inventory valuation and capital consumption adjustments. As noted above, however, reported profits may differ from profits as measured on corproations' own books due to different methods of calculating depreciation.

The IVA and CCAdj have caused systematic deviations of NIPA profits from reported profits. Except for 1961 and 1963, the IVA was negative and lowered NIPA profits relative to reported profits (chart 9). From 1950 to 1961 and from 1974 to 1979, the

CCAdj was negative and lowered NIPA profits relative to reported profits. These adjustments were especially large, and negative, in the mid- and late-1970's and produced substantial divergences between NIPA and reported profits.

Despite the divergences from NIPA profits due to the IVA and CCAdj, movements in the ratio of reported profits to NFC GDP exhibit the same sort of cyclical volatility as the ratio of NIPA profits to the NFC GDP (chart 10). This volatility holds regardless of whether or not net interest is added to reported profits. The peak ratio of reported profits to NFC GDP, observed in 1950, is much higher than that for NIPA profits because of a large negative IVA, which reduced NIPA profits relative to reported profits. Abstracting from cyclical fluctuations, there was a fairly steady decline in the ratio of reported profits to NFC GDP (with or without net interest) in the 1950's and 1960's. In the 1970's, however, although the ratio of reported profits to NFC GDP stayed low by historical standards, the ratio of reported profits plus net interest to NFC GDP returned to levels similar to those of the late 1950's and early 1960's.

The longer run movements of reported profits and net interest may be examined by using decade averages of their ratios to NFC GDP (table 4).

The ratio of reported profits to NFC GDP decreased 0.038 from the 1950's to the 1960's and a further 0.023 from the 1960's to the 1970's. Increases in net interest, however, reduced the decrease of the ratio of reported profits plus net interest to NFC GDP to 0.029 and 0.009.

A regression equation relating the ratio of reported profits plus net interest to NFC GDP to the ratio of actual to potential real GNP was estimated for 1950–69. It produced an average forecasted value for the ratio of reported profits plus net interest in the 1970's of 0.164, somewhat above the observed value of 0.155. A similar equation, estimated over the 1950's, yielded a moderate overprediction of the 1960's ratio, and another, estimated over 1960's, yielded a moderate underprediction of the 1950's ratio. (The estimated equations are in appendix table A.2). There was thus less stability in the relationship in the 1950's and the 1960's than was found for

CHART 8

Ratios of NIPA Profits Plus Net Interest to Gross Domestic Product and of Actual to Potential Gross National Product

Note. — Ratio of NIPA Profits plus net interest to GDP is for nonfinancial corporations.

U.S. Department of Commerce, Bureau of Economic Analysis

82-1-8

Table 4.—Average Ratios of Reported Profits and Net Interest to Nonfinancial Corporate Gross Domestic Product

	1950–59	1960–69	1970–79
Reported profits	0.185	0.147	0.124
Net interest	.008	.017	.031
Reported profits plus net interest	.193	.164	.155

---

[4]. A Chow test, based on the regression estimate of the relationship for 1950–69 and a regression estimate of the relationship for 1970–79, indicates a significant change in the relationship at the 0.95 level of confidence.

NIPA profits. The downward shift in the ratio of reported profits plus net interest to NFC GDP in the 1970's, relative to its relationship to the ratio of actual to potential real GNP in the 1950's and 1960's, was much smaller than it was for NIPA profits.
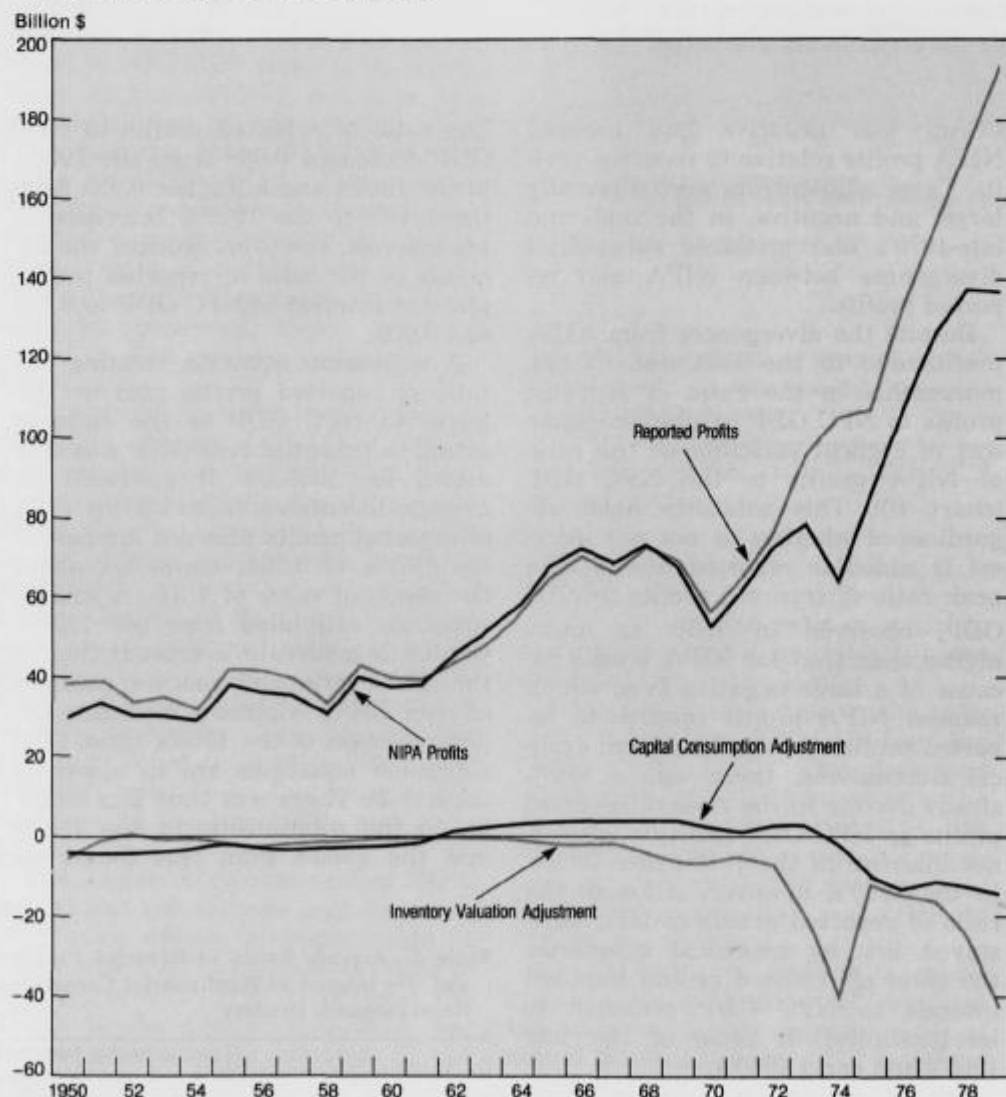
After-tax measures.—The ratio of after-tax NIPA profits plus net interest to NFC GDP has the same general pattern—of troughs during recessions and peaks during expansions—that is exhibited by before-tax NIPA profits plus net interest. The most prominent feature of the after-tax ratio's pattern is a pronounced peak in the 1960's. The ratio fluctuated around the same general levels in the 1950's and the 1970's (chart 10). The pattern reflects,

in addition to the movements of before-tax NIPA profits, changes in the effective tax rate on NIPA profits (the effective tax rate is measured as the ratio of corporate profits taxes accrued to NIPA profits).

The ratio of after-tax reported profits plus net interest to NFC GDP also has a pattern of peaks during expansions and troughs during recessions. Like the after-tax NIPA profits measure, it shows a pronounced peak during the 1960's, but also has a very high value in 1950 and sustained high values in the middle and late 1970's. This pattern reflects both the movements of before-tax reported profits and changes in the effective tax rate on reported profits.

Effective tax rates on reported profits depend on many factors including the Federal statutory maximum tax rate, Federal tax rates on profits smaller than the amounts charged the maximum tax rate, State and local profits tax rates, changes in special tax provisions (such as carry-forward provisions for past losses, depletion allowances, and investment tax credits), and the proportion of corporations reporting losses. Table 5 shows measures of the effective profits tax rate, including State and local corporate profits taxes, on various profits measures, with and without net interest. In addition to depending on the factors just listed, the measures of the effective profits tax rate that include NIPA profits vary with changes in inventory profits and profits attributable to misdepreciation of the capital stock, which are included in taxable profits but are excluded from NIPA profits.

The statutory maximum tax rate was increased sharply, from 42 percent to 52 percent, at the beginning of

CHART 9

Profits and Adjustments to Profits

Billion $

Note. — Measures are for nonfinancial corporations.

U.S. Department of Commerce, Bureau of Economic Analysis   82-1-9

Table 5.—Effective Corporate Profits Tax Rates on Profits of Domestic Nonfinancial Corporations

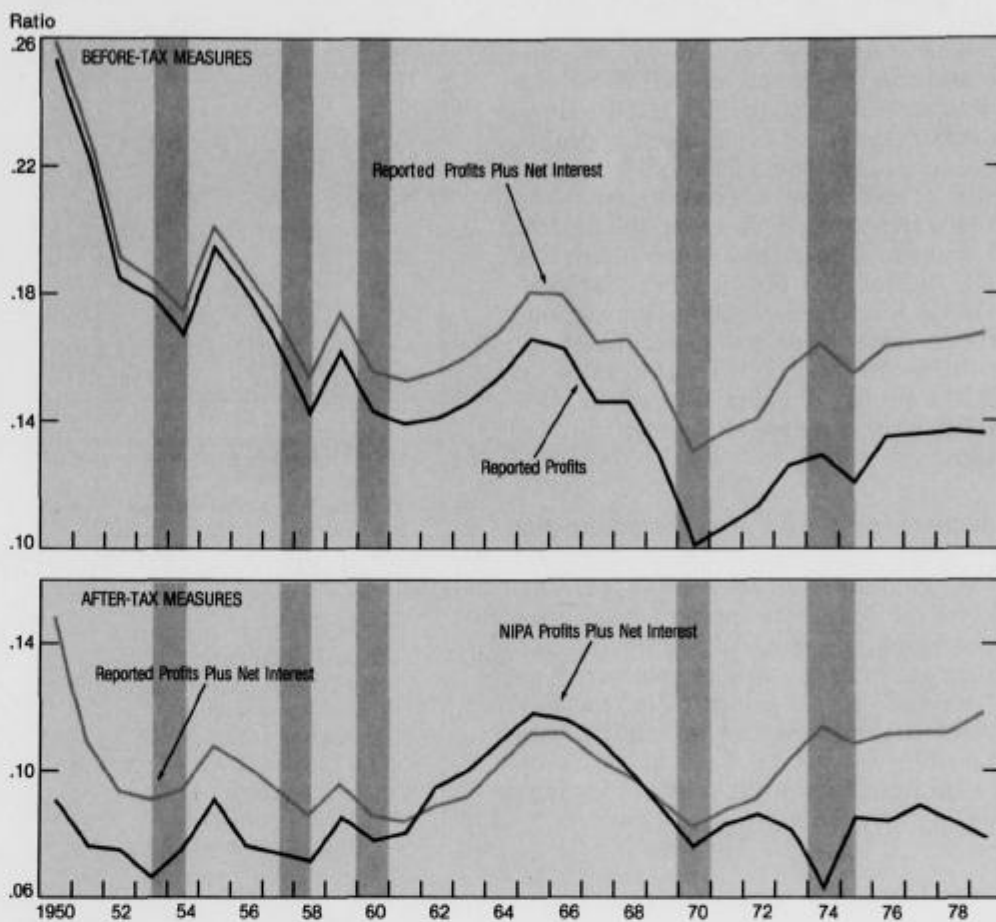| Year	Effective tax rate relative to:			
	NIPA profits	NIPA profits plus net interest	Profits reported by corporations	Profits reported by corporations plus net interest
1950	0.5706	0.5535	0.4387	0.4285
1951	.6359	.6161	.5424	.5279
1952	.5888	.5659	.5275	.5091
1953	.6154	.5903	.5298	.5110
1954	.5478	.5197	.4877	.4653
1955	.5280	.5067	.4810	.4633
1956	.5585	.5327	.4796	.4605
1957	.5473	.5153	.4797	.4549
1958	.5351	.4915	.4800	.4446
1959	.5168	.4797	.4808	.4485
1960	.5139	.4703	.4841	.4452
1961	.5084	.4609	.4922	.4475
1962	.4529	.4121	.4696	.4258
1963	.4445	.4064	.4701	.4279
1964	.4151	.3804	.4328	.3952
1965	.4017	.3686	.4169	.3815
1966	.4086	.3708	.4193	.3796
1967	.4023	.3570	.4174	.3688
1968	.4556	.4005	.4577	.4021
1969	.4910	.4113	.4778	.4019
1970	.5128	.3878	.4756	.3662
1971	.4791	.3715	.4552	.3570
1972	.4617	.3657	.4382	.3508
1973	.5081	.3931	.4162	.3357
1974	.6607	.4507	.3898	.3113
1975	.4792	.3529	.3843	.2986
1976	.4908	.3848	.3900	.3200
1977	.4710	.3729	.3876	.3186
1978	.4891	.3859	.3862	.3189
1979	.5103	.3835	.3606	.2923
1950–59	.5644	.5371	.4927	.4714
1960–69	.4494	.4038	.4531	.4070
1970–79	.5062	.3847	.4023	.3269

the Korean War; was reduced to 48 percent during 1964; was temporarily increased to 52.8 percent in 1968–70 by the Vietnam War surcharge; and was decreased to 46 percent in 1979. The various measures of the effective tax rate have generally shown rough agreement with movements in the statutory maximum tax rate, but have also exhibited a tendency toward a long-run decline relative to the statutory maximum tax rate. As a result of the increasing size of net interest (which is not subjected to profits taxes) relative to profits, effective tax rates on profits (NIPA or reported) plus net interest have fallen relative to effective rates on profits alone. Because inventory profits and profits attributable to misdepreciation are excluded from NIPA profits but are included in reported profits, the effective tax rate on NIPA profits has generally been higher than that on reported profits; exceptions are found in the middle 1960's, when the misdepreciation of capital caused reported profits to be low relative to NIPA profits. In the 1950–59 and the 1970–79 periods, the effective tax rate on NIPA profits averaged higher than the statutory maximum tax rate.

Rates of return.—Table 2 shows eight measures of rates of return on capital stock.[5] For some analytical purposes, rates of return to capital are the preferred presentation. The sum of profits plus net interest relative to the capital stock is especially interesting because the ratio represents the total return to investing and avoids the changes in the rate of return measured by profits alone that result from changes in the relative importance of debt versus equity financing.

Rates of return to capital have fluctuations that differ from comparable measures of ratios to product as the result of variations in the ratio of cap-

---

CHART 10

Ratios to Gross Domestic Product

Notes. — 1. Measures are for nonfinancial corporations.
2. See note 2 on Chart 7.

U.S. Department of Commerce, Bureau of Economic Analysis

82-1-10

---

ital to NFC GDP. The latter ratios also exhibit cyclical fluctuations, with peaks occurring in recession and troughs in expansions (chart 11). The cyclical fluctuations of the ratio of capital to NFC GDP augment the cyclicality of profits, and the rates of return to capital exhibit sharper cyclical fluctuations than do comparable measures of the ratio of profits to NFC GDP (chart 12).

Although the cyclical fluctuations are sharper, rates of return, as measured by both NIPA and reported profits plus net interest, exhibit the same general fluctuations as do their counterpart ratios to NFC GDP. The rates of return were high in 1950 and 1951 at the beginning of the Korean War and were generally high during the long expansion in the 1960's. In the late 1960's, they dropped and appear to have maintained the lower level in the 1970's.

Summary of Section I.—Movements in the ratios of all measures of profits and profits plus net interest to NFC GDP have, in varying degrees, mirrored year-to-year fluctuations in the cyclical conditions of the economy. The beginning of the Korean War appears to have boosted the ratios in 1950 and 1951. The ratios were also relatively high in the 1960's. The ratio of NIPA profits plus net interest to NFC GDP appears to have dropped in the 1970's, relative to what the state of the economy would have indicated. There was a much smaller apparent shift in the ratio of reported profits plus net interest to NFC GDP.

Various measures of rates of return to capital also exhibited cyclical fluctuations. These measures were high in 1950 and 1951, and also in the middle 1960's. In the late 1960's, they dropped and appear to have maintained the lower level in the 1970's.

II. Factors Underlying the Movement of Domestic Nonfinancial Corporate Profits

The following exposition concentrates on the ratio of NIPA profits plus net interest to NFC GDP. However, the choice of a specific profits measure and the inclusion or exclusion of net interest are not critical to the exposition. The basic theoretical framework described below holds for all measures of profits discussed above. Empirical results using various measures of profits and rates of return—in addition to the ratio of NIPA profits plus net interest to NFC GDP—are discussed later in the section.

CHART 11

Ratio of Capital to Gross Domestic Product

Notes. — 1. The ratio is current-dollar nonfinancial corporate net reproducible tangible capital to current-dollar nonfinancial corporate GDP.
2. See note 2 on Chart 7.

U.S. Department of Commerce, Bureau of Economic Analysis

A short-run theory of corporate profits

Commonly accepted short-run theories of corporate profits emphasize the residual nature of profits and corporate pricing using markups on "normal" costs.[6] Specifically, corporations are assumed to set unit prices for their output as fixed markups on normal average units costs.[7] This may be represented algebraically as:

$$(1) \quad p = (1+m)c_n$$

where:

p = the price per unit;
m = the markup rate;
c_n = normal costs, and is made up of the normal per-unit costs of labor, indirect business taxes, depreciation, and materials (including energy).
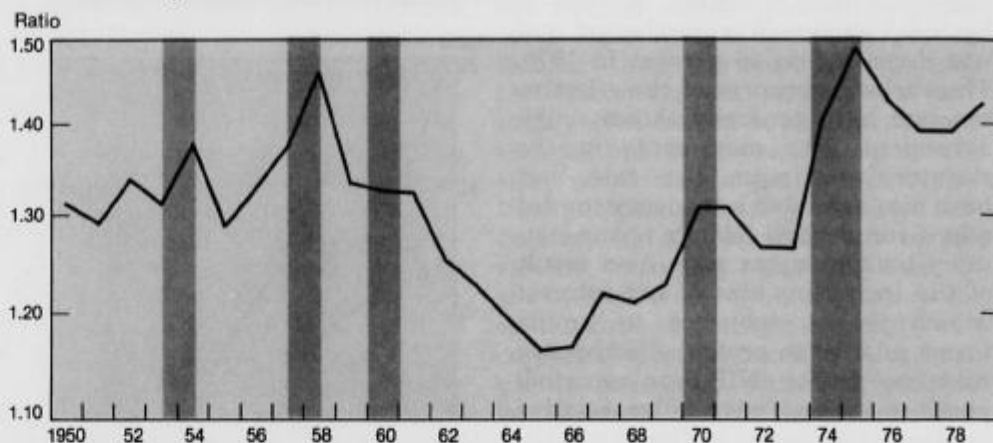
In the short run, corporations are assumed to adjust employment and production volume, rather than prices, to meet demand. Profits (including net interest) are the residual of the value of output less the actual cost of production. This may be represented algebraically as:

$$(2) \quad \pi + I = pQ - wL - M - D - T$$

where:

π = corporate profits;
I = net interest;
Q = the volume of output;
w = the wage rate;
L = labor input;
M = materials costs (including energy);
D = depreciation;
T = indirect taxes.

When the economy is in a cyclical trough, actual unit costs for corporations will be higher than normal unit costs, reflecting such factors as labor hoarding and higher than normal depreciation charges per unit of output. As a result, profits are depressed. Conversely, profits are higher than normal when the economy is near a cyclical peak. Normal unit costs may be represented algebraically as:

$$(3) \quad c_n = (wL_n + M_n + D + T_n)/Q_n$$

where n subscripts denote normal values. Setting the variables in equation (2) at their normal values and substituting using equation (3) yields:

$$(4) \quad \pi_n + I_n = pQ_n - c_nQ_n.$$

Equation (1) may be solved for c_n:

$$(5) \quad c_n = p/(1+m).$$

Substituting equation (5) in equation (4) yields:

$$(6) \quad \pi_n + I_n = pQ_n - \left(\frac{p}{1+m}\right)Q_n.$$

Equation (6) may be manipulated algebraically to obtain the ratio of normal profits plus net interest to normal value of output as a function of the markup rate:

$$(7) \quad \frac{\pi_n + I_n}{pQ_n} = \frac{m}{1+m}.$$

Corporations are assumed to target on a desired ratio of normal profits plus net interest to normal current-dollar sales:

$$(8) \quad \frac{\pi_n + I_n}{pQ_n} = \alpha,$$

and by equation (7), they can adjust their markup rate to obtain the desired ratio. The desired ratio is assumed to be set by considerations of long-run profit maximization or other objectives and to be largely unaffected by cyclical conditions.

The observed ratio of profits plus net interest to current-dollar sales will vary with the cyclical state of the economy because actual unit costs will differ from normal unit costs. Noting that actual unit costs can be expressed as:

$$(9) \quad c = (wL + M + D + T)/Q,$$

equation (2) may be simplified as:

$$(10) \quad \pi + I = pQ - cQ.$$

This may be renormalized to show the actual ratio of profits plus net interest to the value of output:

---

6. The first six equations in this discussion are based on the theory set forth by William D. Nordhaus in "The Falling Share of Profit," *Brookings Papers on Economic Activity*, 1974:1, 182–185.
7. See William D. Nordhaus and Wynne Godley, "Pricing In the Trade Cycle," *Economic Journal*, September 1972, 853–851, for a full discussion of this hypothesis and the difference between normal and cyclical costs.

CHART 12

Rates of Return on Capital

Percent

Reported Profits Plus Net Interest

NIPA Profits Plus Net Interest

1950   52   54   56   58   60   62   64   66   68   70   72   74   76   78

Notes. — 1. Measures are for nonfinancial corporations. Capital is net reproducible tangible capital.

2. See note 2 on Chart 7.

U.S. Department of Commerce, Bureau of Economic Analysis

82-1-12

$$(11) \qquad \frac{\pi + I}{pQ} = 1 - \left(\frac{c}{p}\right).$$

Substituting equation (1) in equation (11) gives the ratio as a function of the markup rate and the ratio of actual to normal unit costs:

$$(12) \qquad \frac{\pi + I}{pQ} = 1 - \left(\frac{1}{1+m}\right)\frac{c}{c_n}$$

where c/c_n = the ratio of actual to normal unit costs.

The ratio of actual to normal unit costs is assumed to be linearly related to the cyclical state of the economy:

$$(13) \qquad \frac{c}{c_n} = a_0 + a_1 B.$$

where B is a measure of the cyclical state of the economy. Substituting equation (13) in equation (12), the ratio of profits plus net interest to the value of output may be related algebraically to the cyclical state of the economy:

$$(14) \qquad \frac{\pi + I}{pQ} = b_0 + b_1 B$$

where: $b_0 = 1 - \left(\frac{1}{1+m}\right) a_0$;

$b_1 = -\left(\frac{a_1}{1+m}\right).$

Letting the value of output be current-dollar NFC GDP and the measure of the cyclical state of the economy be the ratio of actual to potential

GNP, equation (14) is of the same functional form as the equations discussed in section I.

Determinants of profits

The ratio of actual to potential GNP is not the only available measure of the cyclical state of the economy. The Federal Reserve's index of capacity utilization in manufacturing is often used as a measure of business conditions. Movements in this index are even more closely related to movements in the ratio of profits to NFC GDP than are movements in the ratio of actual to potential GNP (chart 13). In the regression analysis underlying this section, capacity utilization was generally found to be a superior measure of the cyclical relation of profits to NFC GDP.[8] The estimated relationship between the ratio of NIPA profits plus net interest to NFC GDP and the capacity utilization index, for the period 1950–79 is:

Piratio = −0.066 + 0.265 CUFRB
        (−3.9)   (3.1)
   $\overline{R}^2 = 0.223$; $D-W = 0.521$; (t−test statistics in parentheses)

---

8. Regression equations were also estimated using the ratio of actual to potential real nonfarm business GDP that was believed to be closely aligned with business conditions for domestic nonfinancial corporations. The potential output series was estimated using a Cobb-Douglas production function. The ratio of actual to potential real nonfarm business GDP less housing was superior, for some measures of the ratio of profits to NFC GDP, to the ratio of actual to potential GNP but inferior to the Federal Reserve's index of capacity utilization in manufacturing.

As discussed in the first section, there were two identifiable special factors—in addition the overall state of the economy—affecting profits in the period 1950–79. The first, the high ratios of profits to NFC GDP in 1950 and 1951 at the start of the Korean War, can be proxied for by adding a dummy variable, D5051, to the equation. This dummy variable has values of 1.0 in 1950 and 1951 and zero elsewhere. The second, the apparent autonomous downward shift in the ratio of profits to NFC GDP in the 1970's, can be proxied for by using another dummy variable, D1970. This variable has values of 1.0 in the period 1970–79 and zero elsewhere.[9] The estimated relationship, including the two dummy variables, is:

Piratio = 0.031 + 0.158 CUFRB + 0.035
    (0.8)   (3.5)   (4.7)
    D5051 − 0.028 D1970
        (−6.9)
    $\overline{R}^2 = 0.803$; $D-W = 1.597$.

The accuracy of the regression equation, as measured by the coefficient of multiple determination, is dramatically improved. In addition, the significance of the coefficient for the capacity utilization index, as measured by its t-test statistic, is increased. And the highly significant negative coefficient of D1970 indicates a downward shift in the ratio of profits to NFC GDP in the 1970's.

In addition to the cyclical state of the economy, other business conditions may also affect profits. First, increases in labor productivity might temporarily boost profits until wages are increased to reflect the higher productivity. (In the analysis underlying this section, productivity was measured as the amount of real private nonfarm GDP, excluding housing, per hour worked in that sector.) Second, changes in output prices, to the extent that they reflect anticipations of higher future costs, would temporarily boost profits. (In the analysis underlying this section, output prices were measured by the deflator for NFC GDP.) Third, changes in the capital-to-output ratio could produce changed markups, and
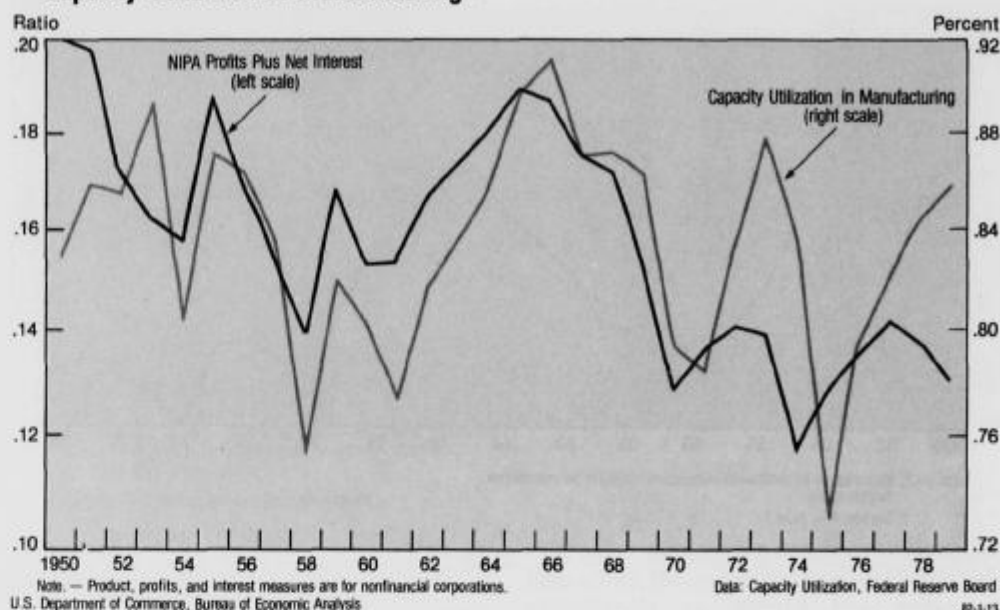
---

9. Estimating the relationship between capacity utilization and the ratio of NIPA profits plus net interest to NFC GDP over the period 1950 to 1969 and forecasting the ratio in the 1970's using actual values for capacity utilization produced overpredictions of the ratio similar to those discussed in Section I.

profits, in order to generate a desired rate of return on investment. (In the analysis underlying this section, the capital-to-output ratio was measured as the ratio of current-dollar net domestic nonfinancial corporate reproducible tangible capital, valued at replacement cost, to current-dollar NFC GDP.) Fourth, increases in wage rates, to the extent that they occur before prices are increased, would temporarily lower profits. (In the analysis underlying this section wage rates were measured as hourly compensation in domestic nonfarm business GDP, excluding housing.) Fifth, high growth rates for real output might provide a temporary boost to profits.

Some researchers have found a variety of time trends and an additional shift dummy to be significant in explaining the movements of some measures of profits. The additional time trends begin in 1965 and in 1970, and the shift dummy variable has values of 1.0 in 1965 and thereafter, and zero elsewhere.[10]

The results of regression equations for the ratio of NIPA profits plus net interest to NFC GDP, using various combinations of variables indicating business conditions, are shown in table 6. The variables measuring changes in economic conditions are expressed as the ratio of the current-year value to the previous year's value. Only D5051, D1970, capacity utilization, and labor productivity are statistically significant at the 0.95 level of confidence, although inflation also contributes to the explanatory power of the equations. The equations indicate that, for every 0.01 increase in the Federal Reserve's index of capacity utilization in manufacturing (measured so that full capacity would have a value of 1.00), there is a 0.002 increase in the ratio of NIPA corporate profits plus net interest to NFC

CHART 13

Ratio of NIPA Profits Plus Net Interest to Gross Domestic Product and the Rate of Capacity Utilization in Manufacturing

Note. — Product, profits, and interest measures are for nonfinancial corporations.
U.S. Department of Commerce, Bureau of Economic Analysis
Data: Capacity Utilization, Federal Reserve Board
82-1-13

GDP. For every 1 percent increase in labor productivity, there is a temporary 0.005 increase in the ratio. For every 1 percent increase in prices, there is a temporary somewhat more than 0.001 increase in the ratio. In 1950 and 1951, the ratio was about 0.023 higher than can be accounted for by the economic variables in the estimated relationships. In the 1970's the ratio was about 0.030 lower than can be accounted for by the economic variables in the estimated relationships.[11] The other economic variables, the other time trends, and the 1965-and-later dummy variable are not significant.[12]

Estimated relationships between ratios using the other measures of NIPA profits and the explanatory variables yielded similar results. Equations containing the same explanatory variables as equations 1 and 5 of table 6, but with ratios of the other measures of NIPA profits to

NFC GDP, are shown in table 7. The effects of capacity utilization are somewhat lower in the equations using after-tax NIPA profits. The effects of changes in labor productivity are similar for all measures of profits. The effects of inflation, however, are generally not significant, and its coefficient reverses sign in equations for after-tax profits that include a time trend. The 1950–51 dummy variable is generally not significant in the equations explaining after-tax profits; this lack of significance appears to be due to high effective tax rates in those years. The dummy variable for the 1970's shift in the ratio has generally similar values in most equations. The time trend has significantly positive coefficients in the equations explaining after-tax profits, and significantly negative coefficients in the equations explaining NIPA profits. Other equations, not shown, failed to yield statistically significant relationships between NIPA profits and the other economic, trend, and shift dummy variables that appeared in table 6 as being insignificantly related to profits.

Although the theory underlying the functional form of the equations explaining profits was described in terms of NIPA profits, an identical description, but in terms of reported profits, can be made. Equations explaining the ratio of reported profits plus net interest to NFC GDP can be found in table 8. (See appendix table

---

10. For a discussion of these trend and shift variables, as well as some of the business conditions evaluated in this article, see: Martin S. Feldstein and Lawrence H. Summers, "Is the Rate of Profit Falling?" *Brookings Papers on Economic Activity,* 1977: 1, 211–227; Daniel M. Holland and Stewart C. Myers, "Trends in Corporate Profitability and Capital Costs," in Robert Lindsay, ed., *The Nation's Capital Needs: Three Studies* (New York: Committee for Economic Development, 1979), 103–188; Herman I. Liebling, *U.S. Corporate Profitability and Capital Formation* (New York: Pergamon Press, 1980); Michael C. Lovell, "The Profit Picture: Trends and Cycles," *Brookings Papers on Economic Activity,* 1978:3, 769–788; and Richard W. Kopcke, "The Decline in Corporate Profitability," *New England Economic Review,* May–June, 1978, 36–60.

11. A Brown-Durbin-Evans cusum-squares test—using regressions of the form of equation 1 of table 6, but without the 1970's shift dummy variable—indicated a structural shift that was statistically significant at the 0.95 level by 1969. In estimated regressions, however, extending the shift dummy, whether with partial or full weight, into years before 1970 reduced the significance of the dummy variable's coefficient and reduced the accuracy of fit of the equation.

12. In general, the capital-to-output ratio, wage rate growth, and growth of real NFC GDP were insignificant in equations using the alternative measures of profits, as were the other time trends and the 1965 shift dummy variable. The full-period time trend, however, was significant in some equations.

A.3 for selected equations explaining other measures using reported profits.) The coefficients (and t-test statistics) of capacity utilization and labor productivity are similar to the estimates in table 6 based on NIPA profits. Inflation, however, has considerably higher (and statistically significant) coefficients in the regressions explaining the ratio with reported profits. The capital-to-output ratio and wage rate growth have significant impacts on the ratio using reported profits. The 1950–51 dummy variable has a larger coefficient than it did for NIPA profits: this occurs because inventory profits were quite high in those years, and are included in reported profits. The full-period time trend has significant, negative coefficients. Other time trend and shift dummy variables are, again, not significant (equations not shown). The 1970's shift dummy variable is not significant; this was true for all measures of reported profits (equations not shown).

The profits measure used in setting markups

An explanation as to why there was a significant downward shift in the 1970's only for the ratios of various measures of NIPA profits to NFC GDP is suggested by the markup hypothesis discussed above. Assume that, as they set markups on normal costs in order to determine prices, corporations are aware of, and do not count as profits, those portions of reported profits that correspond to the IVA and CCAdj; that is, when setting their prices, corporations target on a measure similar to a desired ratio of NIPA profits to current-dollar sales. In this case, equation (14), the profit-to-output explanatory equation used as the basis for the regression experiments, is based on the NIPA measure of profits. Note that NIPA profits is the sum of reported profits plus the two adjustments:

$$(15) \qquad \pi = \pi_r + IVA + CCAdj$$

where:

$$\pi_r = \text{reported profits.}$$

Substituting equation (15) in equation (14) yields:

$$(16) \qquad \frac{\pi_r + IVA + CCAdj + I}{pQ} = b_0 + b_1 B.$$

Rearranging terms, this equation may be expressed as:

$$(17) \qquad \frac{\pi_r + I}{pQ} = b_0 + b_1 B - \frac{IVA}{pQ} - \frac{CCAdj}{pQ}.$$

If corporations target on NIPA profits in setting their markups, regression equations of the form of equation (17) should yield estimated coefficients of -1.0 for the ratios of IVA and CCAdj to NFC GDP.

Alternatively, if corporations do count the portion of reported profits corresponding to IVA and CCAdj as part of their true profits and set their prices based on a measure similar to a desired ratio of reported profits to current-dollar sales, a "book profit illusion" would exist and a relationship of reported profits to business conditions would hold true rather than the relationship of NIPA profits to business conditions of equation (14):

$$(18) \qquad \frac{\pi_r + I}{pQ} = b_0 + b_1 B.$$

Table 6.—Equations Explaining the Ratio of NIPA Corporate Profits Plus Net Interest to NFC GDP

[Period 1950–79]

Explanatory variable	Equation							
	1	2	3	4	5	6	7	8
Constant	−0.668 (−3.2)	−0.648 (−2.7)	−0.628 (−2.8)	−0.644 (−3.0)	−0.667 (−3.0)	−0.652 (−2.0)	−0.632 (−3.0)	−0.661 (−2.8)
FRB Index of Capacity Utilization	.201 (5.6)	.196 (3.8)	.210 (5.2)	.172 (3.4)	.201 (5.3)	.108 (5.1)	.106 (5.4)	.199 (4.7)
Change in labor productivity	.510 (4.3)	.505 (4.0)	.503 (4.1)	.449 (3.1)	.510 (4.1)	.508 (4.1)	.508 (4.3)	.588 (4.0)
Inflation	.137 (1.5)	.195 (1.4)	.173 (1.5)	.163 (1.6)	.188 (2.4)	.128 (1.2)	.110 (1.1)	.135 (1.3)
D5051	.023 (3.5)	.023 (3.1)	.022 (3.3)	.021 (3.9)	.023 (2.9)	.028 (3.4)	.023 (3.5)	.023 (3.2)
D1970	−.029 (−0.5)	−.036 (−5.4)	−.029 (−5.6)	−.031 (−6.3)	−.029 (−4.7)	−.031 (−3.9)	−.033 (−5.9)	−.039 (−5.4)
Capital-to-output ratio		−.002 (−.2)						
Wage rate growth			−.072 (−.6)					
Growth of real NFC GDP				.046 (1.8)				
Time trend for full period					−.000 (−.0)			
Time trend for 1965 and later						.017 (.2)		
Time trend for 1970 and later							.092 (1.0)	
D1965								.000 (.1)
$\bar{R}^2$	.889	.885	.886	.887	.884	.885	.890	.894
D-W	1.668	1.684	1.651	1.721	1.667	1.693	1.880	1.661

Note.—t-test statistics are shown in parentheses.

Table 7.—Equations Explaining the Ratios of Various Measures of NIPA Profits and Net Interest to NFC GDP

[Period 1950–79]

Explanatory variable	Measure					
	Profits		After-tax profits		After-tax profits plus net interest	
Constant	−0.513 (−2.0)	−0.644 (−2.5)	−0.639 (−2.5)	−0.450 (−2.0)	−0.792 (−2.5)	−0.473 (−2.2)
FRB Index of Capacity Utilization	.188 (4.3)	.218 (4.9)	.141 (3.4)	.112 (3.0)	.150 (3.0)	.019 (2.7)
Change in labor productivity	.400 (3.1)	.514 (3.0)	.515 (3.5)	.441 (3.6)	.568 (3.2)	.437 (2.7)
Inflation	.034 (.3)	.098 (.9)	.050 (.5)	−.032 (−.3)	.163 (1.2)	−.008 (.1)
D5051	.032 (4.0)	.022 (2.5)	−.011 (−1.4)	.003 (.4)	−.028 (−2.1)	.004 (.5)
D1970	−.044 (−7.8)	−.034 (−4.8)	−.021 (−3.6)	−.034 (−5.6)	−.007 (−1.0)	−.030 (−5.0)
Time trend		−.079 (−2.0)		.113 (1.3)		.191 (5.8)
$\bar{R}^2$	.510	.020	.327	.300	.248	.724
D-W	1.350	1.425	1.309	1.875	.933	1.920

Note.—t-test statistics are shown in parentheses.

Table 8.—Equations Explaining the Ratio of Reported Corporate Profits Plus Net Interest to NFC GDP

[Period 1950-79]

Explanatory variable	Equation number						
	1	2	3	4	5	6	7
Constant	−0.635 (−.2)	−0.806 (−2.6)	−0.832 (−2.6)	−1.542 (−5.3)	−0.552 (−1.9)	−0.774 (−2.5)	1.897 (−4.9)
FRB Index of Capacity Utilization	.202 (2.9)	.230 (4.5)	.231 (4.2)	.513 (7.4)	.288 (5.9)	.177 (2.6)	.528 (8.5)
Change in labor productivity	.037 (.4)	.384 (2.2)	.394 (2.2)	.482 (3.7)	.339 (2.1)	.347 (1.2)	.434 (3.6)
Inflation	−.027 (−.2)	.396 (2.9)	.418 (2.9)	.290 (2.9)	.637 (4.3)	.444 (3.2)	.482 (4.4)
D5051	.075 (6.4)	.044 (2.9)	.045 (2.9)	.047 (5.3)	.044 (4.4)	.037 (3.0)	.046 (6.5)
D1970			−.004 (−.4)				
Time trend		−.168 (−4.5)	−.163 (−2.0)	−.119 (−1.8)	−.126 (−3.5)	−.189 (−4.7)	−.120 (−2.1)
Capital-to-output ratio				.150 (4.7)			.135 (4.8)
Wage rate growth					−.669 (−2.7)		−.355 (−2.9)
Growth of real NFC GDP						.111 (1.3)	
R̄²	.682	.820	.814	.908	.859	.825	.923
D-W	.760	.994	1.027	1.618	.645	1.185	1.335

Note.—t-test statistics are shown in parentheses.

Table 9.—Equations Using the Ratios of IVA and CCAdj to Current-Dollar NFC GDP to Explain the Ratio of Profits to NFC GDP

[Period 1950-70]

Explanatory variable	Profits measure			
	NIPA profits plus net interest		Reported profits plus net interest	
Constant	−0.734 (−3.7)	−0.720 (−3.6)	−0.734 (−3.7)	−0.720 (−3.6)
FRB Index of Capacity Utilization	.235 (6.3)	.234 (6.1)	.235 (6.3)	.234 (6.1)
Change in labor productivity	.486 (4.2)	.488 (4.1)	.485 (4.3)	.483 (4.1)
Inflation	.202 (2.2)	.189 (1.9)	.202 (2.2)	.190 (1.9)
D5051	.029 (3.7)	.029 (3.6)	.029 (3.7)	.029 (3.6)
D1970	−.024 (−5.1)	−.026 (−3.7)	−.024 (−5.1)	−.026 (−3.7)
Time trend		−.014 (1.3)		−.014 (1.3)
Ratio of IVA to NFC GDP	.447 (2.4)	.444 (2.3)	−.563 (−2.9)	−.560 (−2.9)
Ratio of CCAdj to NFC GDP	−.059 (−.4)	.056 (.5)	−1.050 (−7.3)	−1.095 (−5.4)
R̄²	.904	.900	.927	.924
D-W	1.647	1.695	1.647	1.695

Note.—t-test statistics are shown in parentheses.

Note that reported profits is NIPA profits less the two adjustments:

$$(19) \qquad \pi_r = \pi - IVA - CCAdj.$$

Substituting equation (19) in equation (18) yields:

$$(20) \qquad \frac{\pi - IVA - CCAdj + I}{pQ} = b_0 + b_1 B.$$

Rearranging terms, this equation may be written as:

$$(21) \qquad \frac{\pi + I}{pQ} = b_0 + b_1 B + \frac{IVA}{pQ} + \frac{CCAdj}{pQ}.$$

If corporations target on reported profits in setting their markups, regression equations of the form of equation (21) should yield estimated coefficients of 1.0 for the ratios of IVA and CCAdj to NFC GDP. Because equations (17) and (21) are linear transformations of one another, it would have been sufficient to estimate only one of the equations in order to test the competing hypotheses. Had only one equation been examined, it would have been necessary to explain why estimated standard errors of the coefficients of one equation could be used to test the alternative hypothesis embodied in the other equation.

As a corollary to these results, if firms target on reported profits, estimated equations explaining the ratio of reported profits plus net interest to NFC GDP should yield coefficients of 0.0 for the ratios of IVA and CCAdj to NFC GDP. Similarly, if the hypothesis that firms act on NIPA profits is true, equations explaining the NIPA profits ratio to NFC GDP should yield coefficients of 0.0 for the ratios of IVA and CCAdj to NFC GDP.

With the use of regression equations of the form of equations (17) and (21), it is possible to test whether firms target on NIPA profits or reported profits. The results are somewhat supportive of the hypothesis that corporations target on NIPA profits in setting their markups (table 9). In the equations using NIPA prof-

its, the coefficients of the IVA and CCAdj ratios are different from 1.0 at the 0.95 level. Similarly, in the reported profits equations, the coefficients of the IVA and CCAdj ratios are different from 0.0 at the 0.95 level. None of these results are consistent with the hypothesis that corporations target on reported profits. In the reported profits equations, the coefficients of CCAdj are not different from −1.0 at the 0.95 level; in the NIPA profits equation the coefficients

Table 10.—Equations Using Rates of Return on Nonfinancial Net Current-Dollar Reproducible Tangible Capital Stock Using Various Measures of Profits and Net Interest

[Period 1950-79]

Explanatory variable	Measure							
	NIPA profits	NIPA profits plus net interest	After-tax NIPA profits	After-tax NIPA profits plus net interest	Reported profits	Reported profits plus net interest	After-tax reported profits	After-tax reported profits plus net interest
Constant	−0.598 (−2.5)	−0.591 (−2.0)	−0.407 (−2.9)	−0.465 (−1.9)	−0.697 (−3.2)	−0.696 (−3.7)	−0.510 (−2.5)	−0.598 (−2.8)
FRB Index of Capacity Utilization	.248 (6.0)	.250 (6.4)	.132 (3.6)	.134 (3.6)	.275 (7.4)	.277 (8.7)	.159 (4.6)	.151 (5.2)
Change in labor productivity	.478 (3.7)	.476 (3.7)	.386 (3.4)	.381 (3.2)	.397 (3.2)	.383 (3.7)	.294 (2.9)	.290 (2.9)
Inflation	.014 (.1)	.016 (.2)	−.063 (−.6)	−.060 (−.5)	.204 (2.1)	.206 (2.5)	.138 (1.5)	.140 (1.7)
D5051	.021 (2.6)	.022 (2.6)	.004 (.5)	.005 (.6)	.038 (4.9)	.030 (5.9)	.021 (2.9)	.022 (3.4)
D1970	−.036 (−5.6)	−.033 (−5.1)	−.032 (5.5)	−.029 (−4.3)	−.015 (−2.5)	−.012 (−2.4)	−.012 (−2.1)	−.009 (−1.7)
Time trend	.004 (.1)	.070 (2.0)	.121 (3.6)	.137 (6.6)	−.113 (−3.4)	−.043 (−1.7)	.004 (.1)	.063 (2.5)
R̄²	.918	.878	.812	.748	.923	.915	.730	.895
D-W	1.762	1.665	1.788	1.037	1.168	1.570	1.456	1.891

Note.—t-test statistics are shown in parentheses.

of CCAdj are not different from 0.0 at the 0.95 level. Both of these results support the hypothesis that firms target on NIPA profits. Two sets of results are inconsistent with this hypothesis, however. In the reported profits equations the coefficients of the IVA ratio is different from −1.0 at the 0.95 level and in the NIPA profits equations, the coefficients of the IVA ratio are different from 0.0 at the 0.95 level. Thus, the results are partially supportive of the hypothesis that corporations base their actions on NIPA profits; the results provide no support to the hypothesis that corporations base their actions on reported profits.

With the addition of the ratios of IVA and CCAdj to NFC GDP as explanatory variables, the 1970's shift dummy variable becomes significant in the reported profits equation. The increases, in the 1970's, in inventory profits and profits corresponding to the misdepreciation of capital (that is, corresponding to the IVA and CCAdj), were coincidentially sufficient to offset the downward shift in NIPA profits; these profits are included in reported profits but not NIPA profits.

Regression equations for other measures of NIPA and reported profits also gave some support to the hypothesis that firms target on NIPA profits. See appendix table A.4 for selected equations with these other measures.

Rates of return

The cyclical nature of the rate of return to nonfinancial corporate capital suggests that equations relating it to business conditions should yield results qualitatively similar to those found for the ratio of profits to NFC GDP. The basic functional form of the equations examined is:

$$(22) \qquad \frac{\pi + J}{K} = b_0 + b_1 B.$$

In this equation, the rate of return is measured by the ratio of NIPA profits plus net interest to current-dollar domestic nonfinancial corporate reproducible tangible capital stock, valued at replacement cost. As was true for the ratio of profits to NFC GDP, various alternative measures of profits, with and without net interest, may be substituted for the

Appendix Tables

Table A.1.—Equations Explaining the Ratio of NIPA Corporate Profits Plus Net Interest to NFC GDP

Explanatory variable	Period		
	1950–69	1950–69	1970–79
Constant	−0.228 (−1.5)	−0.116 (−.80)	−0.130 (.8)
Ratio of actual to potential GNP	.453 (2.4)	.285 (1.8)	.001 (1.3)
R^2	.346	.207	.000
D-W	.954	.472	1.661

Note.—t-test statistics are shown in parentheses.

Table A.2.—Equations Explaining the Ratio of Reported Corporate Profits Plus Net Interest to NFC GDP

Explanatory variable	Period			
	1950–69	1950–59	1960–69	1970–79
Constant	−0.276 (−1.3)	−0.412 (−1.3)	−0.054 (−.5)	0.869 (2.2)
Ratio of actual to potential GNP	.455 (2.2)	.609 (1.9)	.281 (2.0)	−.218 (−1.2)
R^2	.172	.225	.262	.062
D-W	.406	.739	.674	.721

Note.—t-test statistics are shown in parentheses.

Table A.3.—Equations Explaining the Ratios of Various Measures of Reported Profits and Net Interest to Current-Dollar NFC GDP

[Period 1950–79]

Explanatory variable	Measure					
	Profits		After-tax profits		After-tax profits plus net interest	
	1	2	3	4	5	6
Constant	−0.749 (−2.1)	−1.137 (−4.1)	−0.553 (−1.9)	−0.884 (−3.4)	−0.818 (−2.3)	−0.655 (−4.1)
FRB Index of Capacity Utilization	.257 (4.5)	.563 (9.1)	.158 (3.1)	.411 (8.0)	.187 (3.1)	.360 (8.5)
Change in labor productivity	.375 (1.9)	.448 (8.3)	.301 (1.8)	.323 (3.3)	.311 (2.1)	.317 (4.1)
Inflation	.334 (2.9)	.389 (3.0)	.202 (1.6)	.374 (4.0)	.272 (2.4)	.471 (6.3)
D5051	.043 (3.3)	.046 (5.4)	.024 (2.2)	.028 (4.2)	.025 (2.6)	.027 (5.5)
Time trend	−.262 (−6.2)	−.067 (1.0)	−.071 (2.0)	−.152 (−3.5)	.024 (.8)	.235 (6.0)
Capital-to-output ratio		.158 (4.8)		.111 (4.7)		.098 (4.6)
Wage rate growth		−.884 (−3.3)		−.495 (−4.7)		−.514 (−6.1)
R^2	.856	.937	.575	.866	.641	.898
D-W	.748	1.206	1.064	1.407	1.464	1.394

Note.—t-test statistics are shown in parentheses.

Table A.4.—Equations Using the Ratios of IVA and CCAdj to Current-Dollar NFC GDP to Explain the Ratios of Various Measures of Profits and Net Interest to Current-Dollar NFC GDP

[Period 1950–79]

Explanatory variable	Measure							
	NIPA profits	NIPA profits plus net interest	After-tax NIPA profits	After-tax NIPA profits plus net interest	Reported profits	Reported profits plus net interest	After-tax reported profits	After-tax reported profits plus net interest
Constant	−0.096 (−3.7)	−0.720 (−3.5)	−0.500 (−2.3)	−0.524 (−2.7)	−0.096 (−3.1)	−0.720 (−3.5)	−0.500 (−2.3)	−0.530 (−2.7)
FRB Index of Capacity Utilization	.265 (6.2)	.234 (6.1)	.128 (3.2)	.105 (2.9)	.265 (6.2)	.234 (6.1)	.128 (3.2)	.106 (2.9)
Change in labor productivity	.493 (3.9)	.453 (4.1)	.409 (3.4)	.398 (3.6)	.493 (3.9)	.453 (4.1)	.409 (3.4)	.401 (3.6)
Inflation	.129 (1.2)	.190 (1.9)	.040 (.4)	.101 (1.0)	.129 (1.2)	.190 (1.9)	.040 (.4)	.106 (1.1)
D5051	.029 (3.2)	.020 (3.6)	.000 (1.1)	.010 (1.3)	.029 (3.2)	.020 (3.6)	.009 (1.1)	.010 (1.3)
D1970	−.033 (−4.0)	−.026 (−3.7)	−.028 (−3.9)	−.021 (−3.2)	−.033 (−4.4)	−.026 (−3.7)	−.028 (−3.9)	−.021 (−3.2)
Ratio of IVA to current-dollar NFC GDP	.496 (2.4)	.444 (2.3)	.330 (1.7)	.287 (1.4)	−.504 (−2.4)	−.556 (−2.9)	−.681 (−3.9)	−.712 (−3.3)
Ratio of CCAdj to current-dollar NFC GDP	−.315 (−1.4)	−.095 (−.5)	.162 (.8)	.382 (2.0)	−1.315 (−5.9)	−1.095 (−5.4)	−.838 (−3.9)	−.525 (−3.2)
Time trend	−.031 (−.6)	−.014 (−.3)	.068 (1.9)	.133 (3.1)	−.031 (−.6)	.014 (.3)	.068 (1.9)	.133 (3.1)
R^2	.926	.900	.815	.765	.944	.924	.787	.758
D-W	1.570	1.695	1.838	1.809	1.570	1.695	1.899	1.871

Note.—t-test statistics are shown in parentheses.